

How to Prepare Multiple Choice Test Items

Phil Mixter, PhD

Associate Clinical Professor
School of Molecular Biosciences, College of Veterinary Medicine

Overview of today's sessions

- Part #1
 - Some review of the literature, resources and best practices available
 - A chance to network with other participants
 - An introduction to item analyses as you reflect after an exam
- A short break
- Part #2
 - Write some questions using new techniques
 - Work collaboratively to gain feedback, regardless of expertise

How can I write effective multiple choice questions?

- A. Employ evidence-based best practices.
- B. Don't write all your questions in one sitting.
- C. Make incorrect answers (known as distractors) plausible.
- D. Randomize correct answers to avoid patterns.
- E. All of the (A., B. C. and D.) above are correct.**

Session Objectives

- Introduce and emphasize best practices for writing MCQ
- Provide extensive resources for improving MCQ writing
- Socialize test writing by providing examples of ways to improve
- Provide an opportunity to collaborate with peers on MCQ writing

Pair and Share

- Think of at least two BARRIERS to writing effective MC questions
- For 60 seconds, share with your neighbor
- Consider similarities and unique features

Discussion: Barriers We Know



Resources for Writing Good MC Questions (Short How-to's)

From *Faculty Focus* by Maryellen Weimer

- [Tips for Writing Good Multiple-Choice Questions](#)
- [Examining Your Multiple-Choice Questions](#)

Resources for Writing Good MC Questions (Longer References)

Brigham Young University's [*Testing Center*](#) & Center for Teaching and Learning

- [How to Prepare Better Multiple-Choice Test Items: Guidelines for University Faculty](#) (PDF)
- [14 Rules for Writing Better Multiple Choice Questions](#) (PDF)

Some Best Practices for Effective MC Questions

- Use a question format rather than an incomplete statement
- Focus the stem of a MC question on single, defined problem (perhaps tied to your detailed, specific student learning outcomes)
- Write the stem (revise as needed) then the correct/best answer, adding plausible distractors last

Some Best Practices for Effective MC Questions

Avoid indicating the correct answer unintentionally

- Correct answer is longer than other options
- Correct answer is the only option that fits grammatically
- Correct answer is always “C.”
- Correct answer is “never” the one with “always” or “all”

Some Best Practices for Effective MC Questions

- Avoid “All of the Above” options
- Avoid “None of the Above” options
- Avoid Negative Questions

Some Best Practices for Effective MC Questions

- Strive for higher-ordered questions
- You may wish to have an entire exam with a balance between lower- and higher-ordered questions

Some Best Practices for Effective MC Questions

Analyze your results and reflect on these analyses:

- Item analysis data from Scantron or Blackboard
- Determine the usefulness of a question within an entire exam and with regard to your learning outcomes
- Understand how the student performance reflects your instruction

Question 12

Difficulty factor:
0.786

Answer Choice	Upper Quarter	Lower Quarter	Total Count	Total %	Discrimination Index
A*	3	3	11	79	0.0
B	1	0	1	7	0.3
C	0	0	1	7	0.0
D	0	1	1	7	-0.3
E	0	0	0	0	0.0

Question 13

Difficulty factor:
0.500

Answer Choice	Upper Quarter	Lower Quarter	Total Count	Total %	Discrimination Index
A*	4	0	7	50	1.0
B	0	1	1	7	-0.3
C	0	1	2	14	-0.3
D	0	1	2	14	-0.3
E	0	1	2	14	-0.3

Question 14

Difficulty factor:
0.500

Answer Choice	Upper Quarter	Lower Quarter	Total Count	Total %	Discrimination Index
A	1	2	5	36	-0.3
B	0	0	0	0	0.0
C	0	0	0	0	0.0
D	0	1	2	14	-0.3
E*	3	1	7	50	0.5

Some Best Practices for Effective MC Questions

What best practices do you have to share?

Some examples

1. Which of the following symptoms are diagnostic for inhaled *Bacillus anthracis*?
 - A. Blocked airway syndrome.
 - B. Cardinal's Cap.
 - C. Diarrhea.
 - D. Eschar lesion.
 - E. Sinusitis.

Some examples

1. Bacteriophage T4 is
 - A. A Baltimore class III virus.
 - B. A ds DNA virus.
 - C. Bound to host cells through capsid proteins.
 - D. Released slowly from an infected cell.
 - E. Only (b.) and (c.) above are correct.

Some Best Practices for Effective MC Questions

Have a colleague read your MC questions and provide feedback



Discussion: How
can you apply
these?



Part #1 Summary: To Improve your MC Question Writing

- Know and follow evidence-based best practices
- Work ahead of time to allow for feedback from colleagues
- Analyze and reflect on the assessment, looking for ways to improve
- Repeat (again)

Part #2 Preview: Collaborate To Improve your MC Question Writing

- Bring your challenging topics and previous experiences
- Draft some questions
- Share with colleagues
- Revise
- Take away some new questions that align with your learning objectives



Contact Phil Mixter:
pmixter@wsu.edu

Contact AOI!
Aoi.li@wsu.edu
li.wsu.edu